

51. (new) The method of Claim 50, wherein the byproduct comprises about 5% by weight calcium and about 15% by weight iron.

52. (new) The method of Claim 50, wherein said organic waste product is animal waste.

53. (new) The method of Claim 52, wherein said animal waste is poultry litter.

54. (new) The method of Claim 50, wherein said byproduct is secondary waste acid neutralization gypsum or filter cake.

55. (new) A method for reducing an amount of bio-available phosphorus in an organic waste product, liquid wastewater or soil, comprising the step of adding to the organic waste product, liquid wastewater or soil a composition or mixture comprising a byproduct from a titanium dioxide manufacturing process in an amount sufficient to immobilize some or all of the phosphorus present in the organic waste product, liquid wastewater or soil, wherein the byproduct comprises about 15-50% by weight calcium, about 10-20% by weight iron, and about 2% by weight titanium dioxide.

56. (new) The method of Claim 55, wherein the byproduct comprises about 23% by weight calcium and about 11% by weight iron.

57. (new) The method of Claim 55, wherein said organic waste product is animal waste.

58. (new) The method of Claim 57, wherein said animal waste is poultry litter.

59. (new) The method of Claim 55, wherein said byproduct is secondary waste acid neutralization gypsum or filter cake.

60. (new) A method for reducing an amount of bio-available phosphorus in an organic waste product, liquid wastewater or soil, comprising the step of adding a byproduct comprising calcium, iron and titanium dioxide to the organic waste product, liquid wastewater or soil in an amount sufficient to immobilize some or all of the phosphorus present in the organic waste product, liquid wastewater or soil.

61. (new) The method of Claim 60, wherein said byproduct is obtained by manufacturing titanium dioxide by chemically processing a titanium dioxide starting material and obtaining said byproduct containing calcium, iron and titanium dioxide.

62. (new) The method of Claim 61, wherein the starting material is ore, coke, or slag.

63. (new) The method of Claim 61, wherein said chemical process is chlorine based.

64. (new) The method of Claim 63, wherein said byproduct comprises about 2-10% by weight calcium, about 10-20% by weight iron, and about 8% by weight titanium dioxide.

65. (new) The method of Claim 64, wherein the byproduct comprises about 5% by weight calcium and about 15% by weight iron.

66. (new) The method of Claim 61, wherein said chemical process is sulfuric acid based.

67. (new) The method of Claim 66, wherein the byproduct comprises about 15-50% by weight calcium, about 10-20% by weight iron, and about 2% by weight titanium dioxide.

68. (new) The method of Claim 67, wherein the byproduct comprises about 23% by weight calcium and about 11% by weight iron.

69. (new) The method of Claim 60, wherein said organic waste product is animal waste.

70. (new) The method of Claim 69, wherein said animal waste is poultry litter.

71. (new) The method of Claim 60, wherein said byproduct is secondary waste acid neutralization gypsum or filter cake.

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a. d 72. (new) A method for controlling the growth of an organism in a body of water to which surface-, subsurface-, or ground-water flows, by reducing an amount of soluble phosphorus in a soil from which said water originates, comprising the step of amending the soil to include a mixture comprising a byproduct in an amount sufficient to immobilize some or all of the phosphorus present in the soil; said byproduct comprising calcium, iron and titanium dioxide.

73. (new) The method of Claim 72, wherein said byproduct is obtained by manufacturing titanium dioxide by chemically processing a titanium dioxide starting material and obtaining said product containing calcium, iron and titanium dioxide.

74. (new) The method of Claim 73, wherein the starting material is ore, coke, or slag.

75. (new) The method of Claim 73, wherein said chemical process is chlorine based.

76. (new) The method of Claim 73, wherein said byproduct comprises about 2-10% by weight calcium, about 10-20% by weight iron, and about 8% by weight titanium dioxide.

77. (new) The method of claim 76, wherein the byproduct comprises about 5% by weight calcium and about 15% by weight iron.

78. (new) The method of Claim 77, wherein said chemical process is sulfuric acid based.

79. (new) The method of Claim 78, wherein the byproduct comprises about 15-50% by weight calcium, about 10-20% by weight iron, and about 2% by weight titanium dioxide.

80. (new) The method of Claim 79, wherein the byproduct comprises about 23% by weight calcium and about 11% by weight iron.

81. (new) The method of Claim 72, wherein said organism is algae.

Acid 82. (new) The method of Claim 72, wherein said organism is bacteria.

83. (new) The method of Claim 82, wherein said bacteria is *Pfiesteria*.

84. (new) The method of Claim 83, wherein said bacteria is *Pfiesteria piscidia*.

85. (new) A method of controlling eutrophication in a body of water, which comprises the step of reducing an amount of soluble phosphorus flowing into said body of water from surface, subsurface or ground-water flows, by immobilizing some or all of the phosphorus present in a soil through which said surface, subsurface or ground-water flows pass; said immobilizing being effected by a byproduct comprising calcium, iron and titanium dioxide.